

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2005/050198

International filing date (day/month/year)
19.01.2005

Priority date (day/month/year)
30.01.2004

International Patent Classification (IPC) or both national classification and IPC
D21F11/00, D21F3/02, D21F7/08, D21F1/00

Applicant
VOITH FABRICS PATENT GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Maisonnier, C

Telephone No. +49 89 2399-2064



WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/EP2005/050198

IAP5 Rec'd PCT/PTO 28 JUL 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2005/050198

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☒ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
 - ☐ the parts relating to claims Nos.

Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	11-13,15,21,31,43-48,50,58,70-72,78-120,122-136,145
	No: Claims	1-10, 14, 16-20,22-30,32-42,49,51-57,59-69,73-77,121,137-144
Inventive step (IS)	Yes: Claims	78-120,122-136
	No: Claims	1-77,121,137-145
Industrial applicability (IA)	Yes: Claims	1-145
	No: Claims	

2. Citations and explanations

see separate sheet

1. Reference is made to the following documents:

D1: WO 03/062528 A
D2: US-A-5 701 682
D3: US-A-2003/033727
D4: US-A-2003/056925
D5: US-A-6 051 105
D6: US-A-6 149 767
D7: US-B-6 436 240
D8: EP-A-1 293 602
D9: EP-A-0 878 579
D10: US-A-4 162 190

2. Unity

2.1. This Authority considers that there are 4 inventions covered by the claims indicated as follows:

I. Claims 1-55,59-77,121,137-145:

apparatus and method for drying a web by pressing the web between two fabrics

II. Claim 56:

method for connecting an anti-rewet layer to a base fabric layer of a permeable dewatering fabric including melting a thin elastomeric cast permeable membrane into the base fabric layer

III. Claims 57-58:

method for connecting an anti-rewet layer to a base fabric of a permeable dewatering fabric comprising needling with each other thin layers of batt fibres disposed on the face and back sides of the base fabric layer.

IV. Claims 78-120, 122-136:

belt press for a paper machine and press belt

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are the following.

- 2.2. Document D1, cited by the applicant in the description, discloses a system for drying a tissue or hygiene web, comprising a permeable structured fabric (14) carrying the web (12) over a drying apparatus (38; 64), a permeable dewatering fabric (36) contacting the web and being guided over the drying apparatus, and a mechanism for applying pressure to the permeable structured fabric, the web and the permeable dewatering fabric at the drying apparatus.

According to D1 (see Fig. 1), the drying apparatus may be a suction roll (38) which applies negative pressure to the permeable structured fabric, the web and the permeable dewatering fabric. The suction roll (38) may further be provided with a pressurized hood (see page 6, paragraph 5). Alternatively, the drying apparatus may comprise a roll (64) or box, to which suction may be applied, associated with an air press (60, 62, 66, 72; 82) comprising a permeable belt (72) which is pressed onto the structured fabric, the web and the dewatering fabric (see Fig. 3-5; page 17, paragraphs 2-3).

Moreover, according to D1, the system is arranged to cause an air flow through the permeable structured fabric, the web and the permeable dewatering fabric into the drying apparatus.

Thus, Document D1 is novelty-destroying for independent Claims 1, 73, 77, 121 and 137.

- 2.3. Document D1 discloses a belt press for a paper machine comprising a roll (38; 64) having an exterior surface, which roll may be a suction roll, and a permeable belt (14) guided over a portion of said exterior surface of said roll, wherein a web travels between the permeable belt and the exterior surface of the roll and wherein the belt has a side with a contact area of at least 10% (see Fig. 1, 3, 6, 7; page 9, paragraph 2; page 30, paragraph 5).

The special technical features of Claims 78, 98, 99 and 122 representing the contribution over the prior art known from D1 are the following: said side of the belt has an open area of at least approximately 25% and the belt is subjected, respectively is capable of being subjected, to a tension of at least 30 KN/m.

Neither these nor any corresponding technical features are present in independent

Claims 1, 73, 77, 121 and 137, so that the technical relationship between the subject-matter of Claims 78, 98, 99 and 122 on the one hand and the subject-matter of Claims 1, 73, 77, 121 and 137 on the other hand required by Rule 13.2 PCT is lacking.

- 2.4. Document D1 discloses a dewatering fabric (36) comprising a base fabric layer and an anti-rewet layer that are connected to each other by lamination (see page 13, paragraphs 2-3).

The special technical feature of Claim 56 representing the contribution over the prior art known from D1 is that in order to connect the anti-rewet layer to the base fabric a thin elastomeric cast permeable membrane is melted into the base fabric layer.

Neither this nor any corresponding technical features are present in independent Claims 1, 73, 77, 78, 98, 99, 121, 122 and 137, so that the technical relationship between the subject-matter of Claim 56 on the one hand and the subject-matter of Claims 1, 73, 77, 78, 98, 99, 121, 122 and 137 on the other hand required by Rule 13.2 PCT is lacking.

- 2.5. Document D1 discloses a dewatering fabric comprising a base fabric layer and an anti-rewet layer that are connected to each other by lamination.

The special technical feature of Claim 57 representing the contribution over the prior art known from D1 is that in order to connect the anti-rewet layer to the base fabric two or less thin layers of batt fibres on a face side of the base fabric layer are needled with two or less thin layers of batt fibres on a back side of the base fabric layer.

Neither this nor any corresponding technical features are present in independent Claims 1, 56, 73, 77, 78, 98, 99, 121, 122 and 137, so that the technical relationship between the subject-matter of Claim 57 on the one hand and the subject-matter of Claims 1, 56, 73, 77, 78, 98, 99, 121, 122 and 137 on the other hand required by Rule 13.2 PCT is lacking.

3. Article 6 PCT

The claims do not meet the requirements of Article 6 PCT for the following reasons.

3.1. Claims 1-55, 59-77, 121, 137-145

3.1.1. Although Claims 1 and 73 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

This objection also applies to independent Claims 77, 121 and 137.

3.1.2. In Claims 1, 73 and 77, it is not clear what is meant by "structured" fabric, since every fabric has some sort of structure.

3.1.3. The relative term "smooth", "thin" and "hydrophobic" used in Claims 7, 31, 52 and 65 have no well-recognised meaning and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claims unclear.

3.1.4. In Claim 10, it is not clear what is meant by "vector layer". In particular, it is not clear which structural features a layer should exhibit to be a "vector" layer.

3.1.5. Claims 11 and 12 should have been made dependent on Claim 8 rather than on Claim 7.

3.1.6. In Claims 42, 51 and 65, it is not clear what is meant by "anti-rewet layer". In particular, it is not clear which structural features a layer should exhibit to be an "anti-rewet" layer.

3.1.7. Claim 49 should have been dependent on Claim 42 rather than on Claim 1.

3.1.8. Claim 50 should have been made dependent on Claim 49 rather than on Claim 1.

3.1.9. In Claim 75, it is not clear what is meant by the expression "a belt press which is adapted to increase in speed".

3.1.10. Claim 76 should have been made dependent on Claim 75 rather than on Claim 73.

3.2. Claim 56

3.2.1. It is not clear what is meant by "anti-rewet layer". In particular, it is not clear which structural features a layer should exhibit to be an "anti-rewet" layer.

3.2.2. Claim 56 should have been formulated as a claim for a method of connecting an "anti-rewet" layer to the base fabric layer of a dewatering permeable fabric rather than to "a method of connecting the anti-rewet layer and the base fabric layer of claim 55", since since Claim 55 does not relate solely to an anti-rewet layer connected to a base fabric layer.

3.2.3. The subject-matter of Claim 56 is not clear, since it appears from the claim that the elastomeric cast permeable membrane is used for connecting the "anti-rewet" layer to the base fabric layer, whereas it appears from the description (see [0018]) that the "anti-rewet" layer is provided in the form of an elastomeric cast membrane which is connected to the base fabric by melting said membrane into the base fabric.

3.2.4. The relative "thin" used in Claim 56 has no well-recognised meaning and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear.

3.3. Claims 57 and 58

3.3.1. It is not clear what is meant by "anti-rewet layer". In particular, it is not clear which structural features a layer should exhibit to be an "anti-rewet" layer.

3.3.2. Claim 57 should have been formulated as a claim for a method of connecting an anti-rewet layer to the base fabric layer of a dewatering permeable fabric rather than to "a method of connecting the anti-rewet layer and the base fabric layer of claim 55", since since Claim 55 does not relate solely to an anti-rewet layer connected to a

base fabric layer.

3.3.3. It is not clear what is meant by "face side" and "back side" of the base fabric.

3.3.4. It is not clear how the needling step can be used for connecting the anti-rewet layer to the base fabric since there is no mention in the claim as to the positioning of the anti-rewet layer within the fabric.

3.3.5. The relative "thin" used in Claims 57 and 58 has no well-recognised meaning and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claims unclear.

3.3.6. It is not clear to which surface reference is made in Claim 58.

3.4. Claims 78-120 and 122-136

3.4.1. Although Claims 78, 98 and 122 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

3.4.2. It is clear from the description (see [0039]) that it is essential to the definition of the fourth invention that the roll be a vacuum roll.
Since independent Claims 78 and 98 do not contain this feature they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

3.4.3. In Claims 78, 98 and 122, it should have been made clear that the belt is guided over a portion of the roll while exerting a pressing force on the roll to define an extended press nip.

3.4.4. In Claims 78, 98 and 122, it is not clear what is meant by "contact area". It should

have been made clear that the first side of the belt exhibiting the claimed contact area is the side facing the exterior surface of the roll.

3.4.5. Claims 116 and 117 appear to be redundant, since Claim 105 already defines the belt as comprising a spiral link fabric.

4. Article 33(1) PCT

4.1. Claims 1-55, 59-77, 121 and 137-145

Insofar as it can be understood, the subject-matter of Claims 1-55, 59-77, 121 and 137-145 does not meet the requirements of Article 33(1) PCT for the following reasons.

4.1.1. As already explained above, Document D1 is novelty-destroying for independent Claims 1, 73, 77, 121 and 137.

Furthermore, D1 (see page 6, paragraph 3 - page 17, paragraph 4; page 23, paragraph 3 - page 31, paragraph 3; Fig. 1, 3, 5, 6) is also novelty-destroying for the subject-matter of dependent Claims 2-7, 17-20, 26, 35, 38, 40-42, 49, 51-55, 62-65, 74-76 and 136-142.

4.1.2. Moreover, the following documents are also novelty-destroying for the following claims:

- Document D2 (see column 4, line 32 - column 12, line 14; Fig. 1):
Claims 1-3, 5-7, 20, 26, 31, 32, 35, 38, 42, 51, 55, 59-59, 73, 77, 121, 137-143
- Document D3 (see [0033]-[0087]; Fig. 2-4):
Claims 1-3, 5-7, 16-20, 22-28, 35-38, 62-64, 73, 74, 77, 121, 137, 142
- Document D4 (see [0021]-[0035]; Fig. 1, 6):
Claims 1-7, 17-20, 26, 32, 38, 42, 51, 55, 59-61, 65, 69, 73, 74, 77, 121, 137, 142
- Document D5 (see column 9, line 36 - column 12, line 56):
Claims 1-3, 7-10, 14, 20, 26, 29, 30, 32-41, 59-64, 69, 72, 73, 75, 77
- Document D6 (see column 4, line 28 - column 5, line 16; column 9, lines 32-56; column 11, line 11 - column 19, line 27):
Claims 1, 4-7, 20, 26, 38, 73, 74, 77, 121, 137, 142-144

4.1.3. Dependent Claims 11-13, 15, 21, 31, 43-48, 50, 70-72 and 145 do not contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to inventive step, the additional features of Claims 11-13, 15, 21, 31, 43-48, 50, 70-72 and 145 being merely matters of normal design procedure which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

Thus, the subject-matter of Claims 11-13, 15, 21, 31, 43-48, 50, 70-72 and 145 cannot be considered as involving an inventive step (Articles 33(1) and 33(3) PCT).

4.2. Claim 56

Document D7 (see column 1, lines 24-60; column 2, lines 6-23) discloses a method of connecting an "anti-rewet" layer comprising a "thin" elastomeric cast membrane (12) to the base fabric layer (11) of a permeable dewatering fabric, the method comprising the step of melting the membrane into the base fabric layer.

Thus, insofar as it can be understood, the subject-matter of Claim 56 is not novel (Articles 33(1) and 33(2) PCT).

4.3. Claims 57 and 58

4.3.1. Document D8 (see [0028]-[0033]; Fig. 1 and 2) discloses a method of connecting an "anti-rewet" layer (40) to the base fabric (30) of a permeable dewatering fabric (10), the method comprising the steps of:

- disposing the anti-rewet layer over the base fabric layer,
- disposing at least one layer of batt fibres (20) over the "anti-rewet" layer;
- disposing at least one layer of batt fibres (20) under the base fabric layer; and
- needling all the layers together.

Thus, insofar as it can be understood, the subject-matter of Claim 57 is not novel (Articles 33(1) and 33(2) PCT).

4.3.2. Moreover, Document D9 (see page 4, line 15 - page 5, line 13; Fig 2) is also novelty-destroying for Claim 57.

4.3.3. Dependent Claim 58 does not contain any additional features which, in combination with the features of Claim 57, meet the requirements of the PCT with respect to inventive step (Articles 33(1) and 33(3) PCT), the additional feature of Claim 58 being already suggested by Document D10 (see column 7, lines 14-19; Fig. 1).

4.4. Claims 78-120 and 122-136

The closest prior art is known from Document D1 which discloses a belt press for a paper machine comprising a roll having an exterior surface, which roll may be a suction roll, and a permeable belt guided over a portion of said exterior surface of said roll and exerting a pressing force of the roll so as to define an extended press nip, wherein a web travels between the permeable belt and the exterior surface of the roll and wherein the belt has a side facing the roll which has a contact area of at least 10%.

The problem to be solved by the fourth invention is to increase the dewatering efficiency of the belt press. This is solved according to 78, 98 and 122 by providing said side of the belt with an open area of at least approximately 25% and subjecting the belt to a tension of at least 30 KN/m. Independent Claim 99 relates to an extended nip press belt for use in the belt press according to the fourth invention.

There is no indication leading in this direction in any of the documents cited which reflect only the technological background.

Thus, independent Claims 78, 98, 99 and 122 appear to relate to novel and inventive subject-matter.

Dependent Claims 77 to 97, 100 to 120 and 123 to 136 define further features of the belt press according to Claims 78 and 122 and of the belt according to Claim 99, and thus also appear to relate to novel and inventive subject-matter.

The possibility of industrial application is obvious.

5. The following points are moreover to be noted.

- 5.1. Independent Claims 78, 98, 99 and 122 should have been formulated in the two-part form with respect to Document D1 (Rule 6.3(b) PCT).
- 5.2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 5.3. The units of measure employed in Claims 32-34 and 59-61 and on pages 7, 8, 12, 25, 41, 42, 48 and 65 are not additionally expressed in terms of the units stipulated by Rule 10.1(a) and (b) PCT.
- 5.4. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in Documents D2 to D10 is not mentioned in the description, nor are these documents identified therein.
- 5.5. The vague and imprecise statement in the description in paragraph [0169] implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them (see also the PCT Guidelines, III-4.3a).